

An approach for defining vehicular demand in SUMO

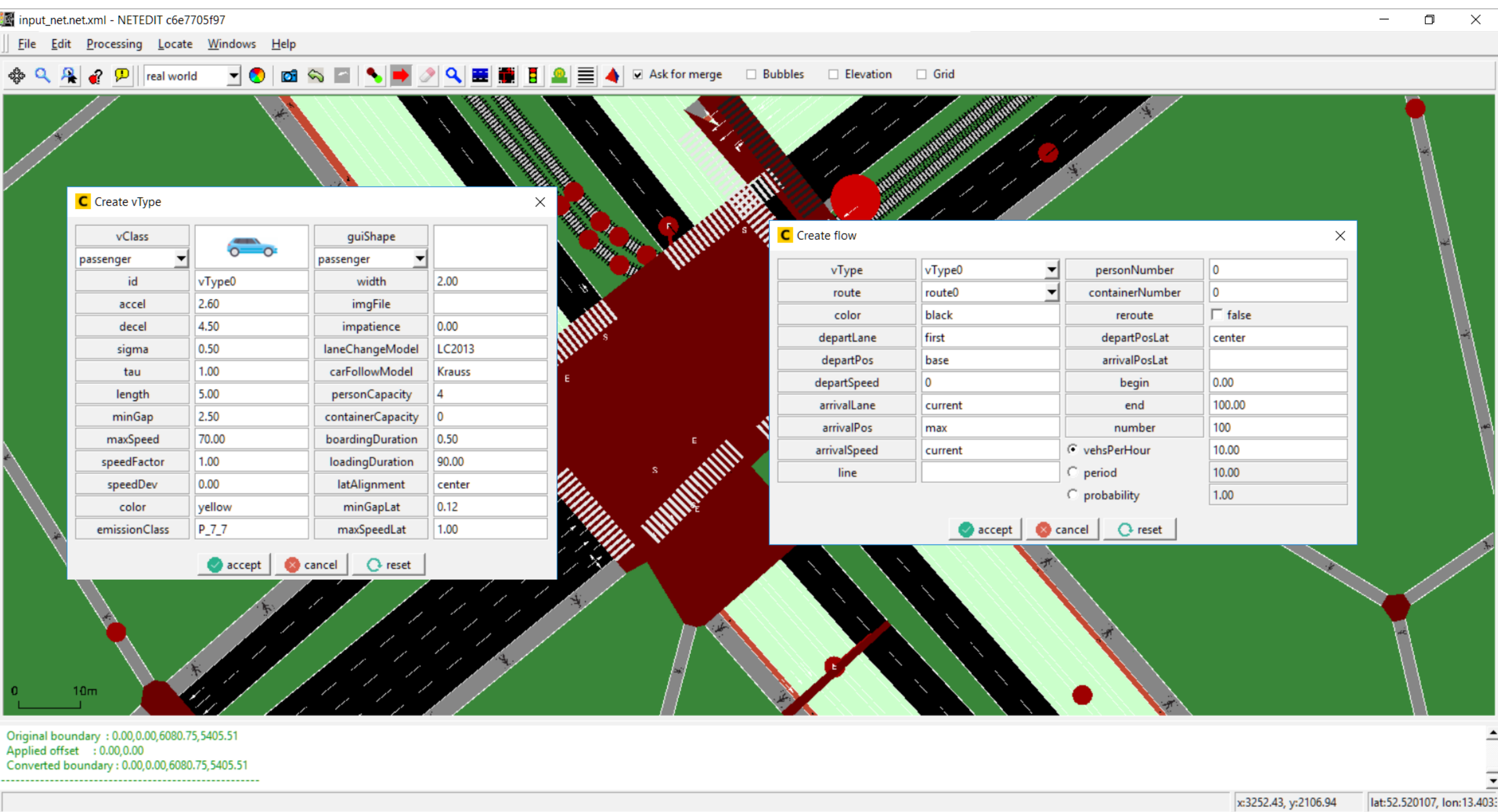
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Abstract

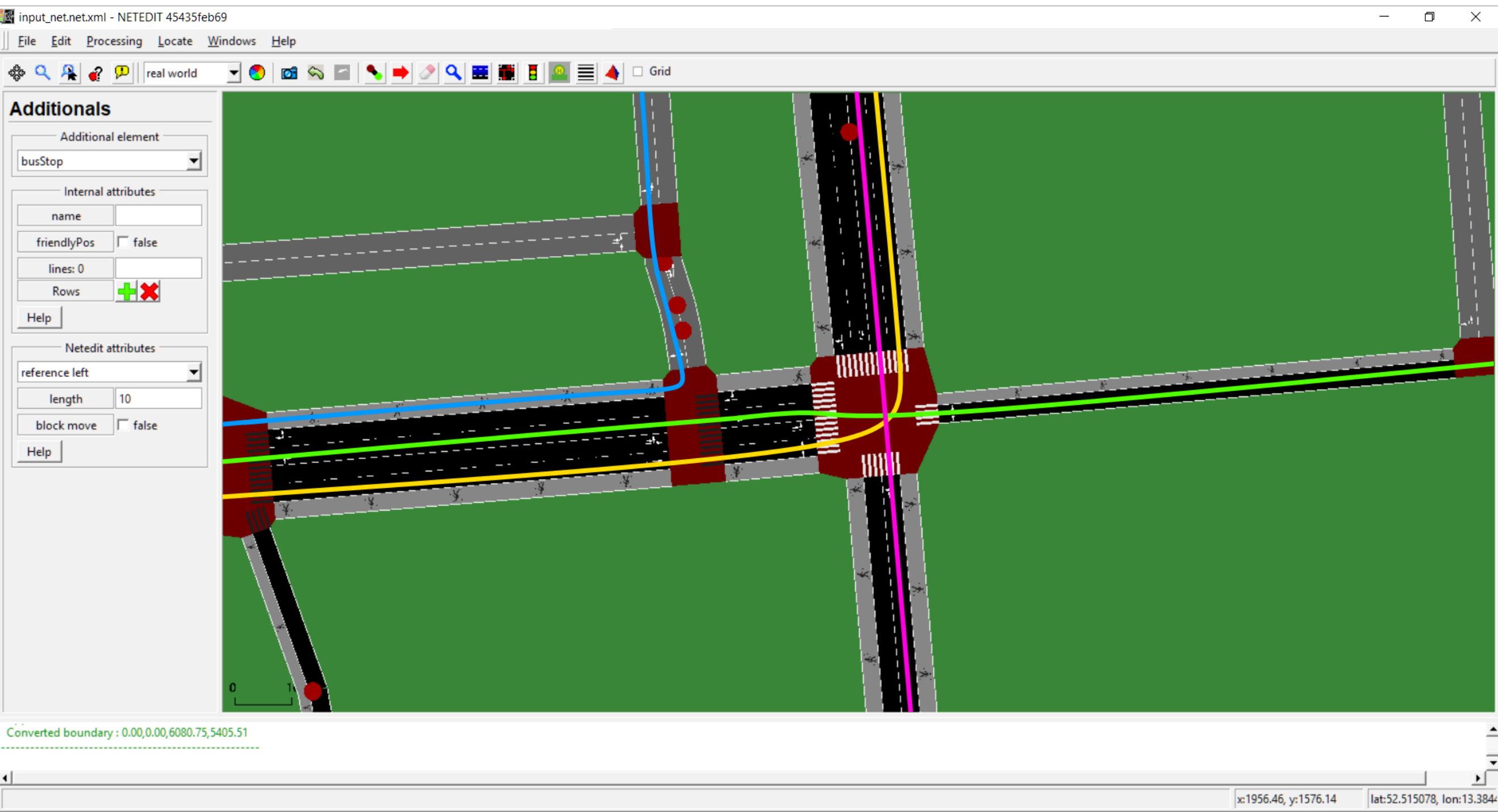
SUMO is a suite of tools that are in constant evolution. Any new feature implemented in SUMO has its counterpart in the rest of SUMO apps (NETEDIT, NETGEN, POLYCONVERT, etc.) [1] and the Route elements are not an exception. Currently there are two possible approaches to the creation of Route elements in a visual and interactive way: An expansion of NETEDIT that allows creating the different elements using editing modes (Similar to the creation of Additional or Polygons) [2], or the creation of a specific application for this purpose, provisionally called TrafficEdit. Both options should allow to create and edit Routes, Vehicles, VehicleTypes and Flows, providing for it dialogues and methods to make the vehicular demand friendly and quickly for the SUMO users. It can include generators of routes oriented to facilitate the most common operations, such as finding the most optimal routes between two Junctions of the network, load and save of Traffic Analysis Zones, representation an edition of Trip Distributions through a OD-Matrices, as well as support to model the vehicular demand as a Maximum Flow Problem [3]. Both NETEDIT and TrafficEdit can include dynamically support for existent tools DFRouter, DUARouter, etc. without using a console command. Using the feedback and advices of SUMO users it will be decided in the future by one of both options.

NETEDIT supporting Routes

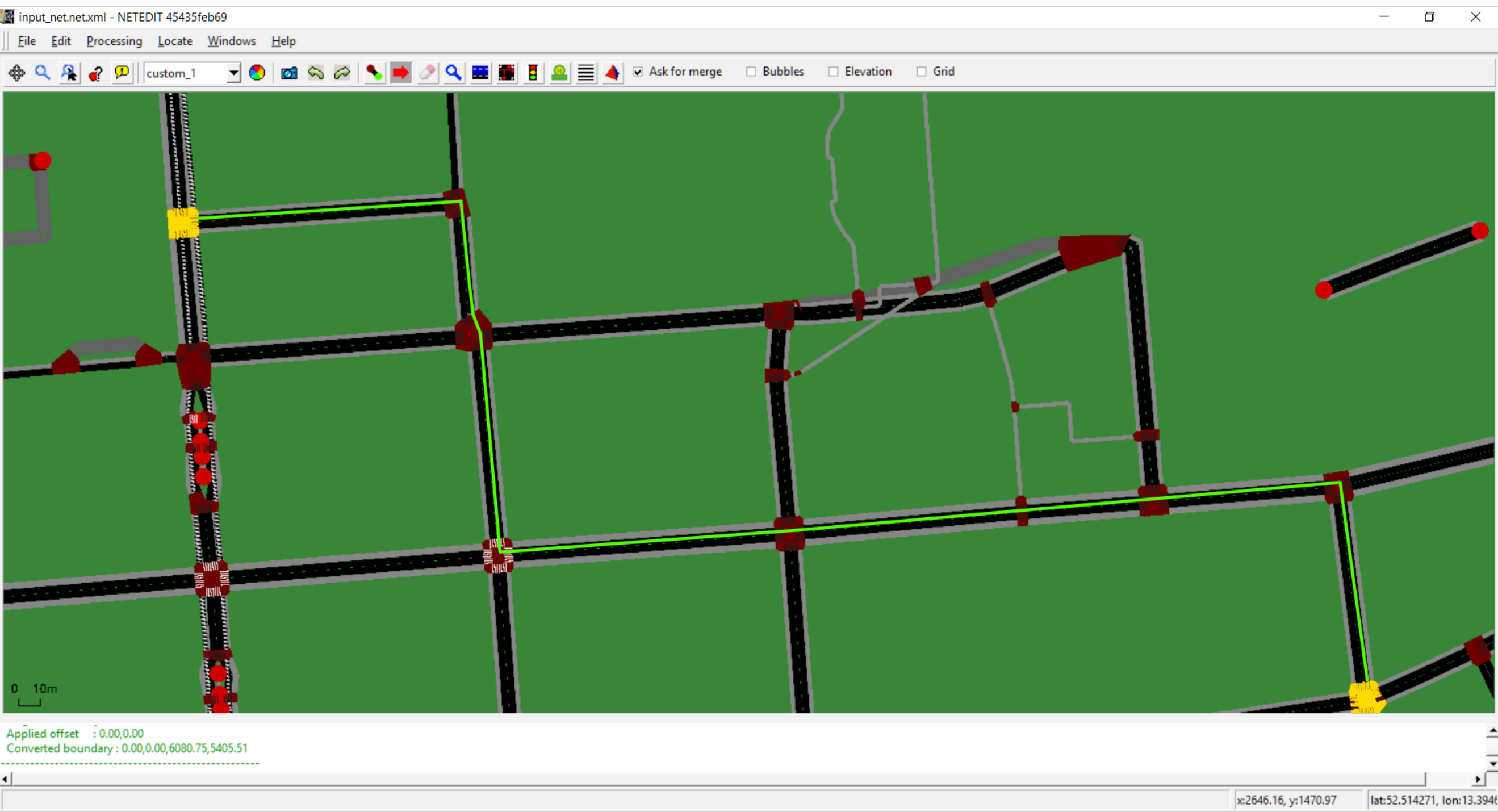
Creation of route elements could be carried out through several methods: Continuous clicking over the edges of the network, manual definition through a text input, loading a route file, or choosing a criterion between two junctions: (Minimum distance, maximum speed, minimum confluence with other routes, etc.)



Defining vehicles and VehicleTypes using NETEDIT dialogues



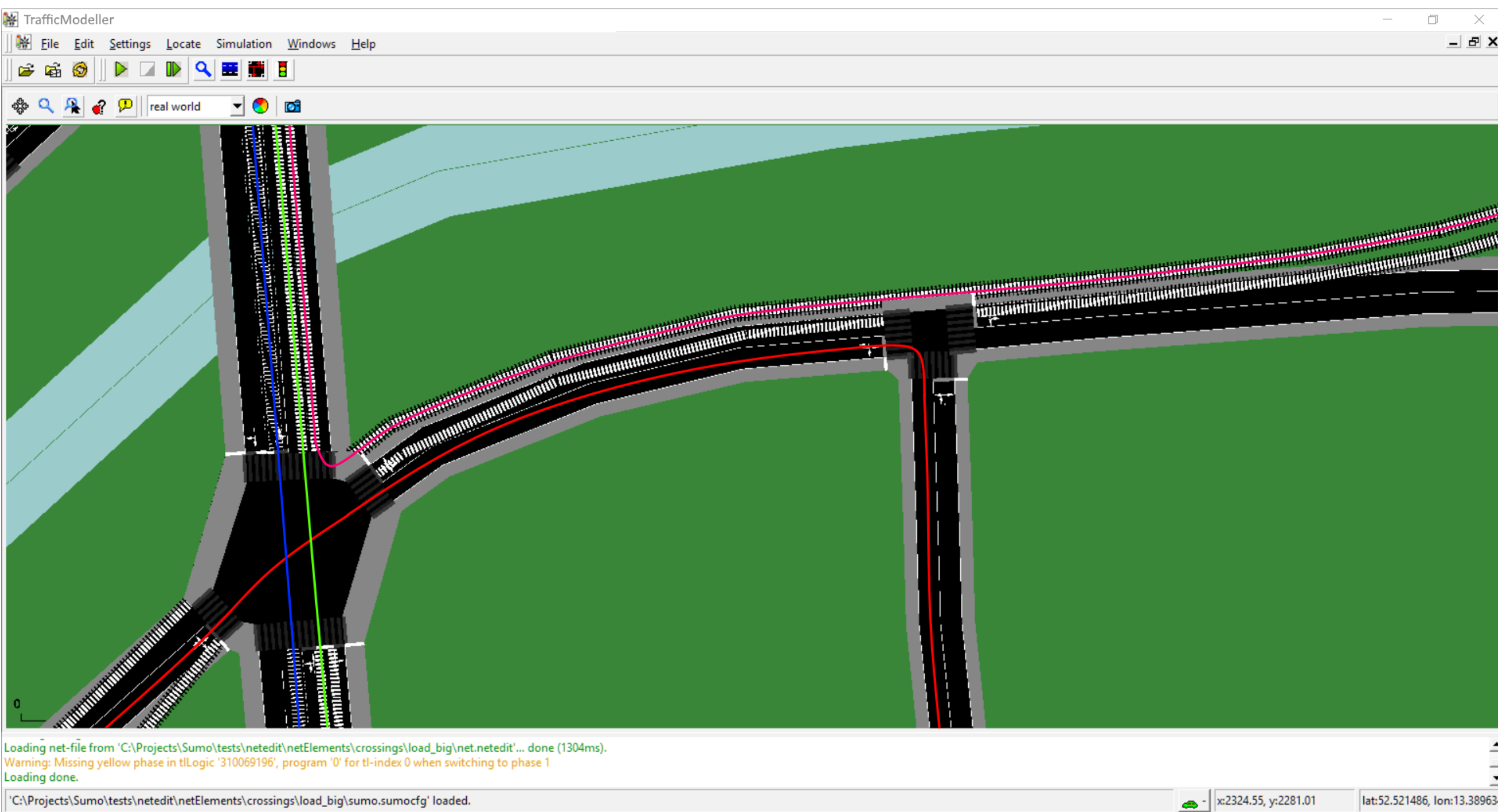
Representation of routes in NETEDIT



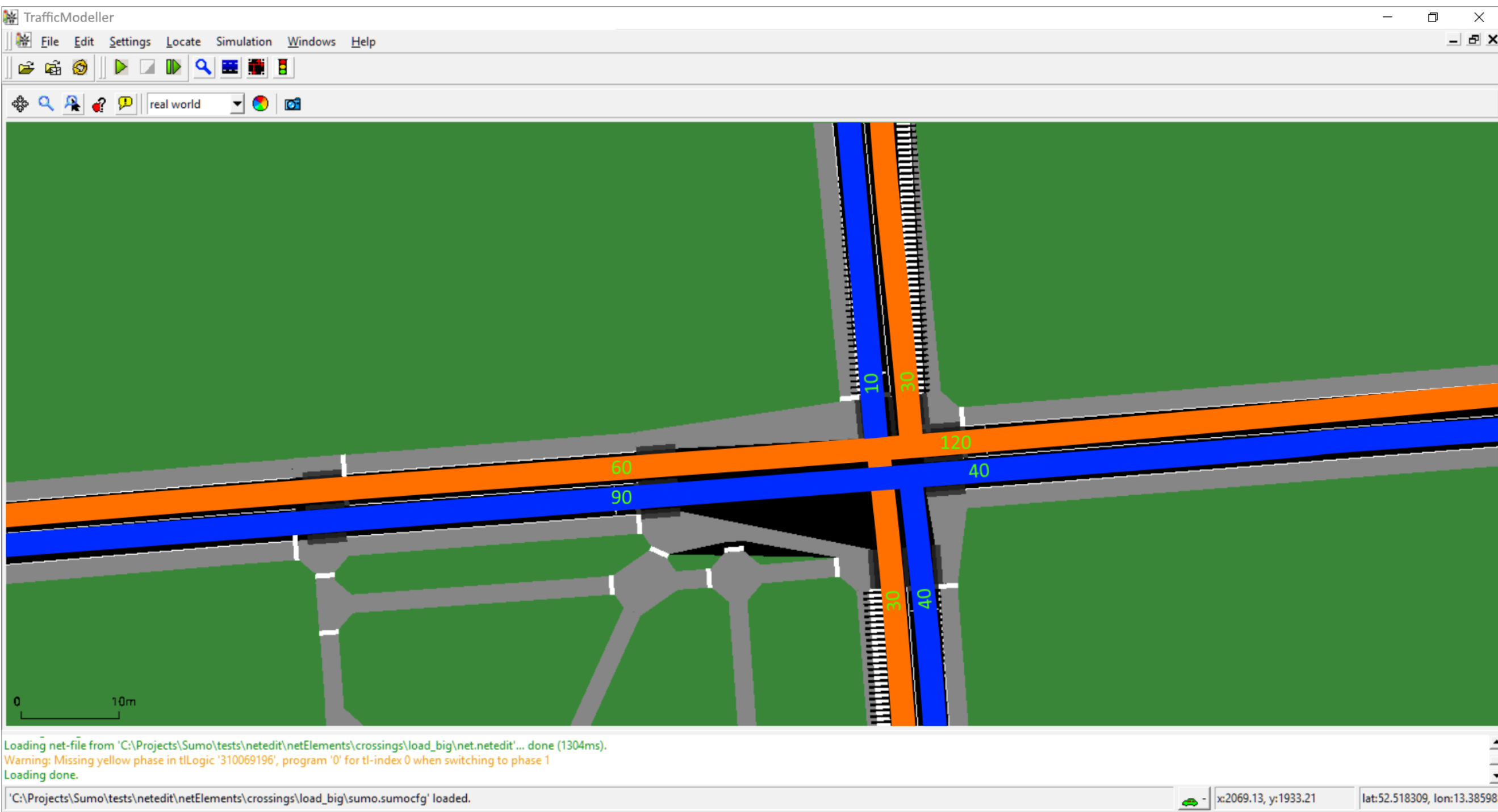
Calculating the shortest route between two junctions

SUMO TrafficEdit

The application TrafficEdit must be a different application of SUMO-GUI and NETEDIT, and must work directly over network imported from OSM or created with NETGEN or NETEDIT. Traffic Analysis Zones (TAZ) and OD Matrices can be represented as a layer over net.



Representation of Routes in TrafficEdit



Defining Flows in TrafficEdit

References

References:

- [1] Krajewicz, D., Erdmann, J., Behrisch, M., & Bieker, L. (2012). *Recent development and applications of SUMO-Simulation of Urban MOBility*. International Journal On Advances in Systems and Measurements, 5(3&4).
- [2] Álvarez López, P., & Erdmann, J. *Supporting additional elements in a simulation using NETEDIT*.
- [3] Behrisch, M. (2015). *6 A Hybrid Approach to Large Scale Simulation Based Traffic Assignment. SUMO 2015–Intermodal Simulation for Intermodal Transport*, 57

Keywords: SUMO, NETEDIT, TrafficEdit, routes, TAZ



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